

HOMework... Questions

p. 530: #4, #7-10, 13, 15, 16, 17

N = total # of payments [compounded x term]
 I% = interest rate [enter as a %]
 PV = loan amount [subtract down payment if given]
 PMT = payment amount [negative #]
 FV = set equal to zero...pay loan off after end of term
 P/Y = number of payments per year
 C/Y = compounding period per year
 PMT: END BEGIN

7. Sara and Sylvie have found a small house in the St. Norbert neighbourhood of Winnipeg. They can buy the house for \$179 900. After negotiating with their bank, they have been offered a mortgage for 90% of the cost at 4.5% compounded semi-annually, with regular weekly payments for 15 years.

- How much will the down payment be?
- How much will the principal of the mortgage be?
- What will the regular payment amount be?
- How long will it take before they have paid off half the loan?
- How much interest will they pay in all?

a) $0.10 * 179900$
 17990

b) $179900 - 17990$
 161910
 $0.90 * 179900$
 161910

c) $N=780$
 $I\%=4.5$
 $PV=161910$
 $PMT=-284.63044...$
 $FV=0$
 $P/Y=52$
 $C/Y=2$
 PMT: END BEGIN

PMT \$284.63

d) $N=453.9094308$
 $I\%=4.5$
 $PV=161910$
 $PMT=-284.63044...$
 $FV=-80955$
 $P/Y=52$
 $C/Y=2$
 PMT: END BEGIN

454 weeks \Rightarrow 8.7 years

e) $780 * 284.63$
 222011.4
 Ans - 161910
 60101.4

15. For the upcoming season, Mike plans to buy a new biathlon rifle that costs \$2152.



- The sporting goods store has offered to finance the purchase at 16.5%, compounded monthly, for a term of 3 years with payments at the end of each month.
 - Mike could also borrow the money from a bank at 8.5%, compounded weekly, for a term of 2 years with weekly payments.
- How much would the rifle cost if he financed it through the store?
 - How much would the rifle cost if he financed it through the bank?
 - What is the difference in the amount of interest that Mike would pay for the two loans?
 - What features of the loan from the sporting goods store might encourage Mike to choose it over the bank loan?

c)

2742.84 - 2152	590.84
2342.08 - 2152	190.08
590.84 - 190.08	400.76

d) fast

a) STORE

N=36	
I%=16.5	
PV=2152	
PMT=-76.190231...	
FV=0	
P/Y=12	
C/Y=12	
PMT: <input type="checkbox"/> END <input checked="" type="checkbox"/> BEGIN	
36*76.19	2742.84

b) BANK

N=104	
I%=8.5	
PV=2152	
PMT=-22.517830...	
FV=0	
P/Y=52	
C/Y=52	
PMT: <input type="checkbox"/> END <input checked="" type="checkbox"/> BEGIN	
104*22.52	2342.08

This one is for you Jacob...since you asked???

c)

```
N=780
I%=4.5
PV=162000
PMT=-284.78865...
FV=0
P/Y=52
C/Y=2
PMT: [ ] [ ] BEGIN
```

d)

```
N=453.9094308
I%=4.5
PV=162000
PMT=-284.78865...
FV=-81000 ←
P/Y=52
C/Y=2
PMT: [ ] [ ] BEGIN
```

I forgot the negative...
\$ out of my pocket!

```
453.9094308/52
8.729027515
.729027515*52
37.90943078
.90943078*7
6.36601546
■
```

8 years
37 weeks
6 days !!!

Problem Solving 101...

If you are not getting the correct answer - TRY to figure why in order to arrive at the correct answer!

9.2

Exploring Credit Card Use

GOAL PAGE 536

Compare credit options that are available to consumers.

EXPLORE the Math

Jayden saw the new sound system he wanted on sale for \$2623.95, including taxes. He had to buy it on credit and had two options:

- Use his new bank credit card, which has an interest rate of 14.5%, compounded daily. (Because this credit card is new, he has no outstanding balance from the previous month.)
- Apply for the store credit card, which offers an immediate rebate on the price but has an interest rate of 19.3%, compounded daily.

As with most credit cards, Jayden would not pay any interest if he paid the balance before the due date on his first statement. However, Jayden cannot afford to do this. Both cards require a minimum monthly payment of 2.1% on the outstanding balance, but Jayden is confident that he make regular monthly payments of \$110.

Calculator screen 1 (14.5% interest):

```

N=28.3411992
I%=14.5
PV=2623.95
PMT=-110
FV=0
P/Y=12
C/Y=365
PMT: [ ] BEGIN
    
```

Calculator screen 2 (14.5% interest):

```

28.341*110
3117.51
Ans-2623.95
493.56
    
```

Calculator screen 3 (19.3% interest):

```

N=28.92467766
I%=19.3
PV=2523.95
PMT=-110
FV=0
P/Y=12
C/Y=365
PMT: [ ] BEGIN
    
```

Calculator screen 4 (19.3% interest):

```

28.925*110
3181.75
Ans-2523.95
657.8
    
```

Solution is given below...

With TVM-Solver...

A)

```

N= SOLVE...28.34
I%= 14.5
PV= 2623.95
PMT= -110
FV= 0
P/Y= 12
C/Y= 365
PMT: [ ] BEGIN
    
```

He pays...

$28.34 \times 110 = \$3117.40$ **BETTER OPTION**

B)

```

N= SOLVE...28.92
I%= 19.3
PV= 2523.95
PMT= -110
FV= 0
P/Y= 12
C/Y= 365
PMT: [ ] BEGIN
    
```

He pays...

$28.92 \times 110 = \$3181.20$

By hand...

Handwritten calculations:

ONE MONTH

(A) $A = P(1 + \frac{r}{n})^{nt}$
 $= 2623.95(1 + \frac{0.145}{365})^{365}$

(B) $2523.95(1 + \frac{0.193}{365})^{365}$

Calculator screen 1 (14.5%):

```

2623.95(1+.145/365)^365
2655.642021
Ans-2623.95
31.89202121
    
```

Calculator screen 2 (19.3%):

```

2523.95(1+.193/365)^365
2604.860824
Ans-2523.95
40.91882353
    
```

Annotations: "Better option" with an arrow pointing to the 14.5% result, and "Interest paid" with an arrow pointing to the difference between the two results.

In Summary

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Key Ideas

- Incentives or promotions are sometimes offered to entice people to use credit cards. For example, an immediate cash rebate may be offered on the first purchase using a credit card. Low interest rates, rewards, or no annual fees may also be offered.
- The full cost of borrowing should be considered before making a decision about using a credit card. This includes the total interest charged, as well as the total payments and the time it will take to pay off the balance.

Copy highlighted information into your notes titled 'Credit Cards'

Need to Know

- Credit cards usually have a minimum amount that must be paid each month, based on a percent of the outstanding balance. If there is no outstanding balance from the previous month and the new balance is paid off in full by the payment due date, no interest is charged.
- If a credit card does not have an outstanding balance and it is used for a single purchase, it can be treated as a loan. The purchase price is the principal borrowed, and regular payments can be made until the balance is paid off.
- The cost of using credit is not just the amount of interest charged. There are incentives, such as cash rebates, that reduce the principal. This may end up costing more in interest but result in a lower total loan payment amount.

HOMEWORK...

Use the TVM-Solver for each of the following...

p. 538: #1 - 4

NOTE: Have screenshots ready if not done!

Cash Rebate - \$ given back at the end
of fixed amount of time...can be used
towards paying off a purchase